



## Scientists collaborate on distortion correcting laser

by **Barbara Baca, Directed Energy Directorate**

KIRTLAND AFB, N.M. — A cooperative research and development agreement between the Air Force Research Laboratory here and the Association of Universities for Research in Astronomy Inc. was signed July 17.

Under the agreement, the laboratory's Directed Energy Directorate and the association will work on a laser that, in part, will improve the clarity of objects seen in space.

This laser is being designed to fire into the mesospheric layer, about 60 miles above the earth, to strike a layer of sodium atoms and cause them to fluoresce – or light up – becoming an artificial star. Some of the light from this star returns to the earth like a beacon. When used with adaptive optics systems on telescopes at the directorate's Starfire Optical Range, scientists are able to correct for distortions caused by the atmosphere.

“Adaptive optics technology is revolutionizing both satellite imaging and ground-based optical astronomy by greatly improving the resolution,” said Dr. John Telle, manager of the sodium guidestar pump-laser development

program.

The directorate will initially benefit from the agreement in that the association will contribute \$40,000. Scientists from both organizations will work together over the next 24 months to build the laser.

The Starfire Optical Range facility is capable of tracking low-earth orbiting satellites. Its 3.5-meter diameter primary mirror is protected by a unique retracting cylindrical enclosure that allows it to operate in the open air. Using adaptive optics, the telescope is able to distinguish basketball-sized objects at a distance of 1,000 miles into space.

The Association of Universities for Research in Astronomy Inc. is a consortium of educational and other non-profit institutions that operate astronomical observatories worldwide. One of their goals is to assist in the advancement of astronomy and related sciences. Under cooperative agreements with the National Science Foundation the association manages several observatories including the Gemini Observatory located in Hawaii's Mauna Kea. @